

Remarks

In the September 25, 2002 Office Action, the Examiner rejected claims 1-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,091,746 to Le Garrec, et al. (hereinafter Le Garrec). In view of the following remarks, Applicant respectfully contends that the rejection has been fully replied to and traversed, and that the application is in condition for allowance, which allowance is respectfully requested.

As recited in claim 1, Applicant's invention relates to a method for cooling at least one laser diode with a cooling fluid, the method comprising positioning heat sinks on opposing sides of the at least one laser diode wherein each of the heat sinks has a passage formed therein and wherein the passages are in fluid communication with the source of cooling fluid but not with the at least one laser diode, and circulating the cooling fluid through the passages wherein heat is removed from the sides of the at least one laser diode by conduction into the heat sinks. Independent claims 5, 10 and 15 provide similar recitations.

In the Detailed Action, the Examiner admits that Le Garrec fails to teach each heat sink having a passage where there is fluid communication with the source of cooling fluid but not with the at least one laser diode and circulating the cooling fluid through the passages wherein heat is removed from the sides of the at least one laser diode by conduction into the heat sinks. As such, the Examiner has failed to provide the elements of a *prima facie* case of obviousness. Instead, the Examiner urges that it would have been an obvious matter of design choice to place a passage in each of the heat sinks for heat exchange by convection of a cooling fluid, since applicant has not disclosed that by having fluid cooling on two opposing sides of the laser solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with heat exchange taking place by natural convection of ambient air. However, the Examiner's attention is respectfully directed to page 2, lines 10-13 of the present application where Le Garrec is discussed and noted as "offer[ing] sub-optimal operating temperatures". As such, at least one problem addressed by the present invention was disclosed therein by Applicant.

Furthermore, in the specification on page 2, lines 19-20 Applicant discloses some conventional approaches do not allow diodes to be individually tested before assembly into an array. The present invention overcomes the problem by positioning heat sinks on opposing sides of the at least one laser diode. As such, at least one additional problem addressed by the present invention was disclosed therein by Applicant.

Moreover, Le Garrec discloses an assembly of cooled laser diode arrays having a single channel for the circulation of a fluid for cooling the linear assembly of diode arrays which ensures a good heat exchange. (Le Garrec, Figure and col. 3, l. 64-col. 4., l. 4). As such, Le Garrec teaches away from each heat sink having a passage where there is fluid communication with the source of cooling fluid as claimed in Applicant's invention.

Regarding claims 2-4, 6-9, 11-14 and 16-20 which depend from claims 1, 10, 15 or 20, Applicant contends that these claims are patentable for at least the same reasons that claims 1, 10, 15 and 20 are patentable. Moreover, Applicant contends these claims recite further limitations, in addition to the limitations of claims 1, 10, 15 and 20, which render these claims additionally patentable. In particular, claims 4 and 9 provide at least one of the heat sinks has a heat spreader positioned adjacent the at least one laser diode. Le Garrec fails to disclose, discuss or suggest a heat spreader. As such, claims 4 and 9 are independently patentable over the cited reference.

Consequently, in view of these remarks, Applicant respectfully contends that the rejection has been fully replied to and traversed, and that the application is in condition for allowance, which allowance is respectfully requested. A check in the amount of \$110.00 is enclosed to cover the Petition fee. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978 -- a duplicate of this paper is enclosed for that purpose..

Respectfully submitted,

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